

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 6,937,421 B2
APPLICATION NO. : 10/042132
DATED : August 30, 2005
INVENTOR(S) : Rubin et al.

Page 1 of 7

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

The title page showing the illustrative figure should be deleted to be replaced with the attached title page.

The drawing sheets, consisting of Figs. 1-7, should be deleted to be replaced with the drawing sheets, consisting of Figs. 1-7, as shown on the attached page.

Signed and Sealed this

Fifth Day of August, 2008

A handwritten signature in black ink, reading "Jon W. Dudas". The signature is stylized, with a large, looped initial "J" and a distinct "D" for "Dudas".

JON W. DUDAS
Director of the United States Patent and Trademark Office

(12) **United States Patent**
Rubin et al.

(10) Patent No.: **US 6,937,421 B2**
(45) Date of Patent: **Aug. 30, 2005**

(54) **PATTERNED MEDIA HAVING OFFSET TRACKS**

(75) Inventors: **Kurt Alan Rubin, Santa Clara, CA (US); Bruce David Terris, Sunnyvale, CA (US)**

(73) Assignee: **International Business Machines Corporation, Armonk, NY (US)**

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 340 days.

(21) Appl. No.: **10/042,132**

(22) Filed: **Jan. 11, 2002**

(65) **Prior Publication Data**

US 2003/0133213 A1 Jul. 17, 2003

(51) Int. Cl.⁷ **G11B 5/58**

(52) U.S. Cl. **360/77.01; 360/77.02; 360/77.03; 360/48; 360/75; 360/76**

(54) Field of Search **360/77.01-77.02, 360/77.07, 77.11, 77.12, 77.03, 75-76, 48, 55, 59, 135, 131, 134, 78.04, 81, 77.14, 78.14; 369/13.56, 44.11, 47.1, 44.26, 53.34**

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,665,118 A * 5/1972 Cooper, Jr. 360/21
4,074,328 A * 2/1978 Hardwick 360/77.06
4,623,867 A * 11/1986 Lundquist et al. 338/32 R
4,704,711 A * 11/1987 Gerard et al. 369/53.34
5,055,951 A * 10/1991 Behr 360/77.12
5,247,398 A 9/1993 Sidman 360/75

5,276,566 A * 1/1994 Clifford, Jr. 360/64
5,587,223 A 12/1996 White
5,820,769 A 10/1998 Chou
6,233,206 B1 * 5/2001 Hamann et al. 369/13.01
6,356,406 B1 * 3/2002 Takano et al. 360/81
6,421,195 B1 * 7/2002 Rubin et al. 360/48
6,430,123 B1 * 8/2002 Mallory 369/44.11
6,500,497 B1 * 12/2002 Wang et al. 427/528

OTHER PUBLICATIONS

M. Todorovic et al., Writing and reading of single magnetic domain per bit perpendicular patterned media, Applied Physics Letters, vol. 74, No. 17, Apr. 26, 1999, pp. 2516-2518.

* cited by examiner

Primary Examiner—David Hudspeth

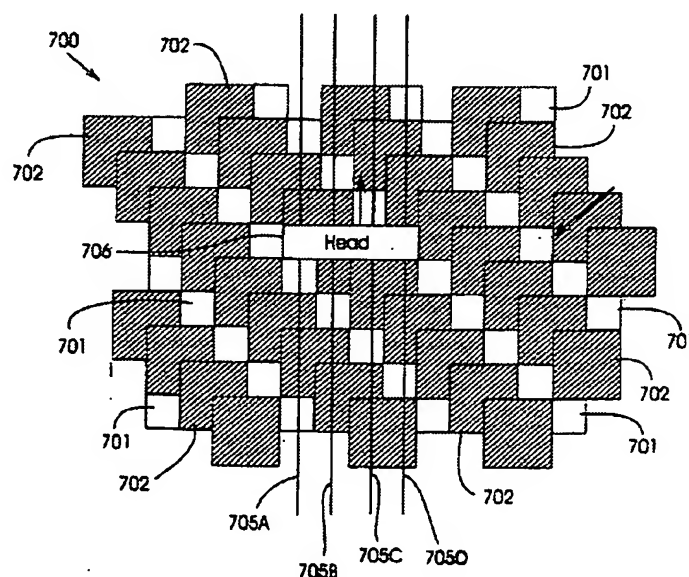
Assistant Examiner—Natalia Figueroa

(74) *Attorney, Agent, or Firm*—Banner & Witcoff; Joseph P. Curtin

(57) **ABSTRACT**

An information recording system includes a storage medium, such as a magnetic or an optical medium, that is formed to have a plurality of adjacent tracks. Each track includes a plurality of storage elements that are arranged substantially along the track in a regular manner. A head disposed in proximity to the storage medium and has a width that spans at least two adjacent tracks. The storage elements are further arranged substantially along first and second axes, such that the first and second axes are substantially perpendicular to each other and are each substantially oriented 45° from an along-track direction associated with a track. The head reads and/or writes information from at least two adjacent tracks spanned by the head.

24 Claims, 5 Drawing Sheets



U.S. Patent

Aug. 30, 2005

Sheet 1 of 5

6,937,421 B2

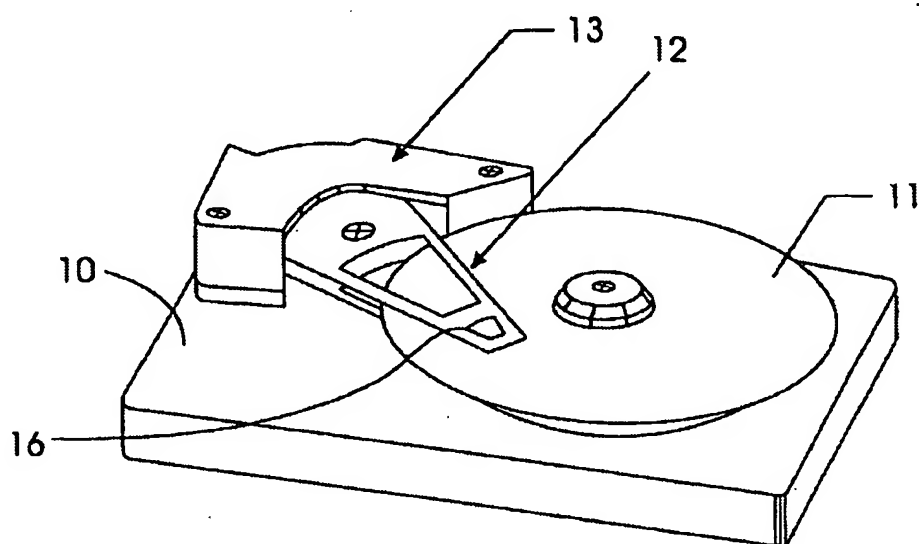


FIG. 1

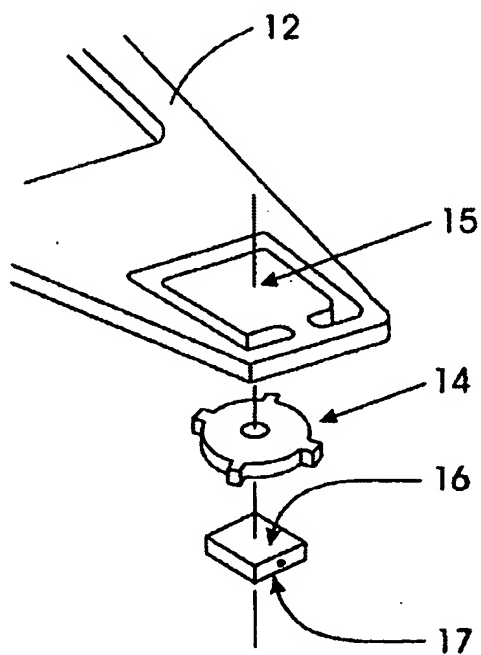


FIG. 2

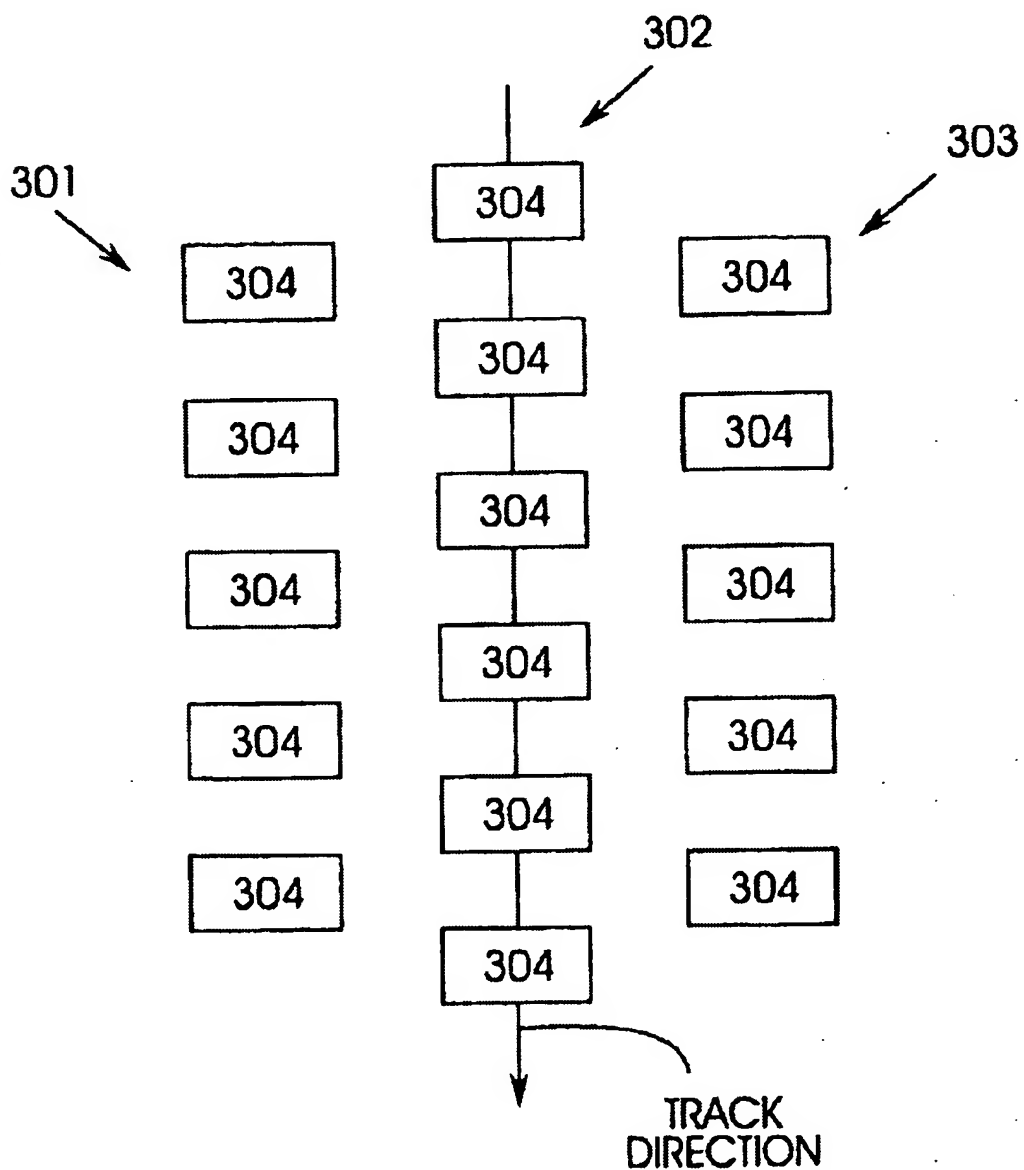


FIG. 3

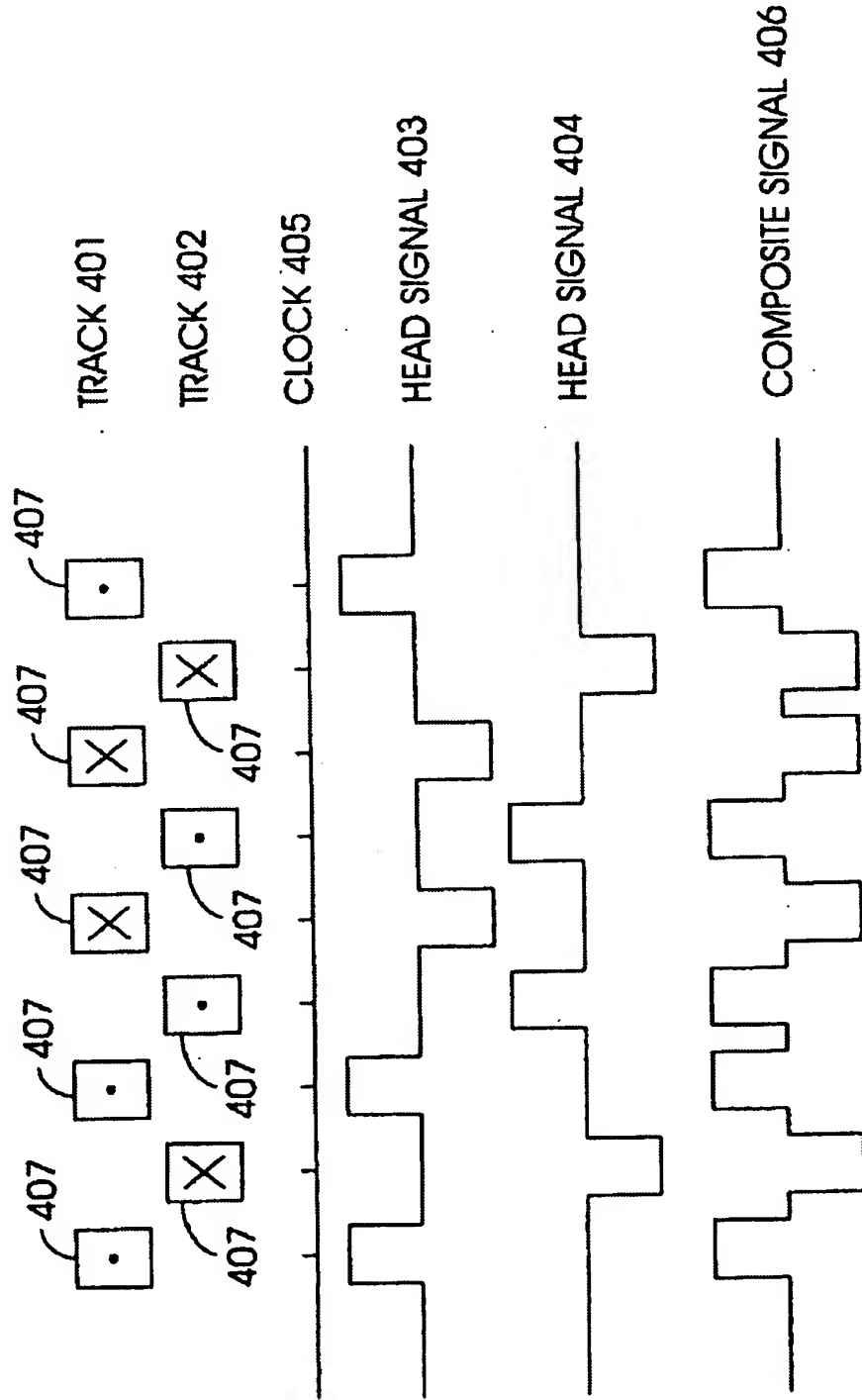


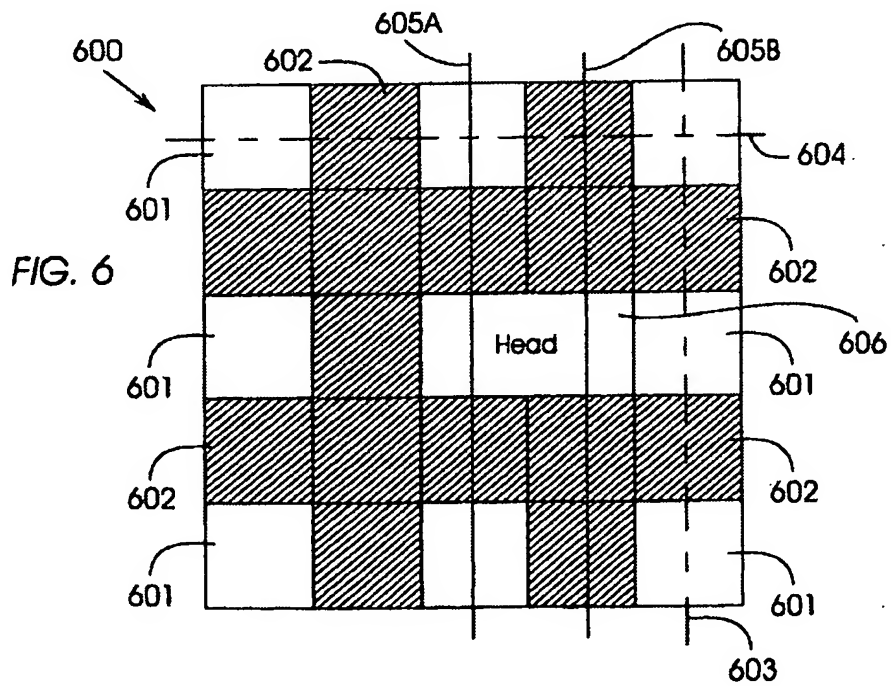
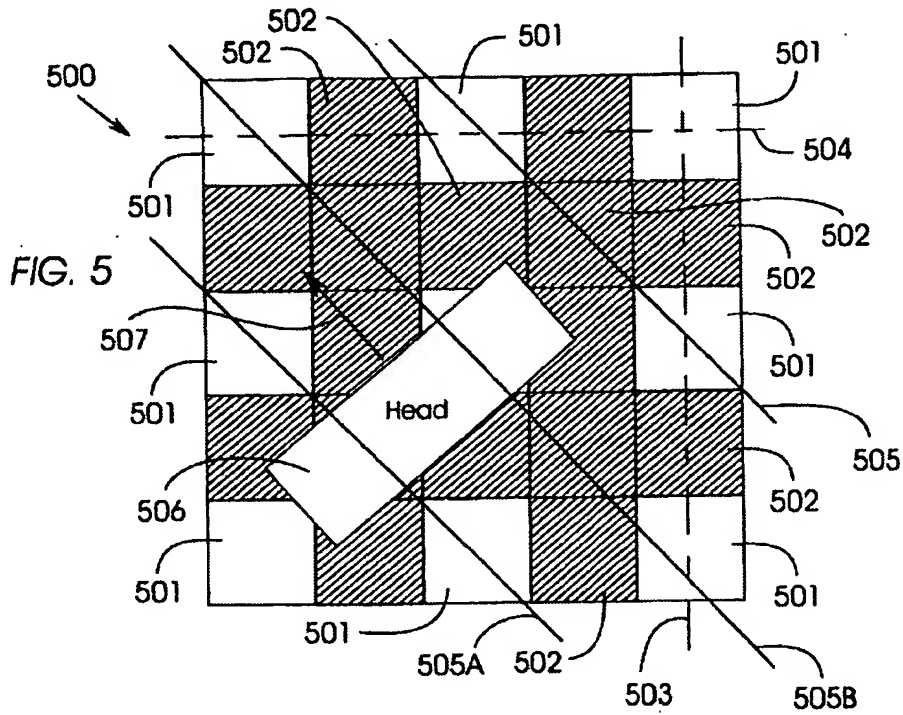
FIG. 4

U.S. Patent

Aug. 30, 2005

Sheet 4 of 5

6,937,421 B2



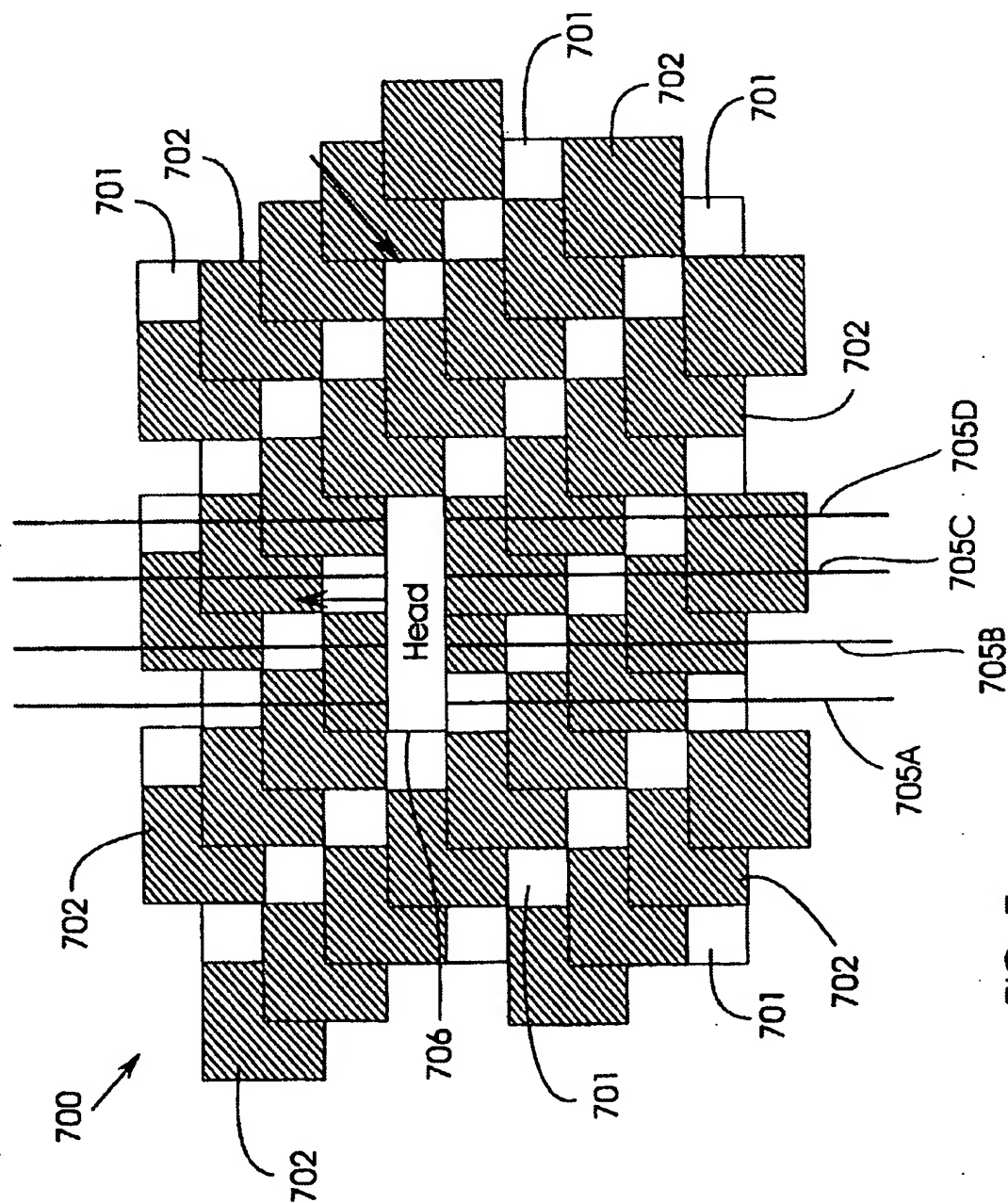


FIG. 7